

III. REMARKS

Preliminary Remarks

Claims 1 to 10 are pending of which claims 1 and 7 are independent. Claim 10 is withdrawn as being directed to a non-elected invention. Claims 1, 3, 5, 7, and 9 and 22 are amended. Support for the claim amendments can be found in the specification as originally filed (see, for example, paragraphs [0033], [0034], [0042], and [0043]). The applicant believes that no new matter is added.

The specification is amended to correct an obvious error. The sequence in Figure 8 was originally named "SEQ ID No. 2". Another SEQ ID NO:2 was introduced with the sequence listing (the original SEQ ID No. 2 is a portion of the updated SEQ ID NO:2). Therefore, the specification is amended to delete indications to the original "SEQ ID No. 2" but retain the locations/positions of the sublancin lantibiotic peptide, the spacer, and the sublancin leader peptide with respect to Figure 8 (for a clearer explanation of the invention). The correlations between the amino acids of Figure 8 (*i.e.*, the original SEQ ID No. 2) and updated SEQ ID NO:2 are obvious to one of ordinary skill in the art. The invention is claimed using the numbering scheme of the updated SEQ ID NO:2.

This response is filed within the statutory period for response and is accompanied by a petition for a three-month extension of time and a check in the required amount. The applicant respectfully requests reconsideration and allowance of the present application.

Patentability Remarks

Rejection under 35 U.S.C. 112 –

Claims 1 to 9 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. The applicant respectfully traverses in view of the preceding claim amendments and succeeding remarks.

Claims 1 and 7 are amended to, *inter alia*, a Lantibody Display Peptide comprising a chimeric polypeptide comprising a lantibiotic peptide, an amino acid

spacer of 1 to 40 amino acids attached to the C-terminus of the lantibiotic peptide, and a subtilin leader peptide attached to the C-terminus of the spacer, wherein the subtilin leader peptide comprises amino acids 97 to 100 of SEQ ID NO:2 (which correspond to residues 78 to 81 of Figure 8). Claim 3 is amended to depend from claim 2, which provided the proper antecedent basis for the term “nucleophilic group”.

The applicant respectfully submits that claims 1 to 9 are not indefinite under 35 U.S.C. §112, second paragraph, and requests withdrawal of this rejection.

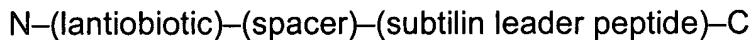
Claims 1 to 9 were rejected under 35 U.S.C. §112, first paragraph, for lack of written description and enablement. The applicants respectfully traverse in view of the preceding claim amendments and succeeding remarks.

As amended, claims 1 and 7 are amended to, *inter alia*, wherein the amino acid spacer of 1 to 40 amino acids and the subtilin leader peptide comprises amino acids 97 to 100 of SEQ ID NO:2. Claims 5 and 9 are amended to wherein the lantibiotic peptide is amino acids 22 to 56 of SEQ ID NO:2. Therefore, the applicant respectfully submits that claims 1 to 9 fully comply with the written description and enablement requirements of 35 U.S.C. §112, first paragraph, and requests withdrawal of this rejection.

Rejection under 35 U.S.C. 102 –

Claims 1 to 4 and 6 were rejected under 35 U.S.C. §102(a), (b), or (e) as being anticipated by Hansen (U.S. Pat. No. 5,516,682). The applicant respectfully traverses in view of the preceding claim amendments and succeeding remarks.

The claimed invention is directed to a mutant or chimeric polypeptide of the formula:



as shown on page 7. The subtilin leader peptide is normally at the N-terminal end of the lantibiotic; it is cleaved during post-translational modification to produce the mature lantibody, which the cell disperses into the surrounding medium. In the present invention, the subtilin leader peptide is at the C-terminal end of the lantibiotic (separated by a spacer of 1 to 40 amino acids) and is not cleaved during post-translational modification. Since the subtilin leader peptide has an affinity for the cell wall (see paragraph [0043] of the specification as filed), the chimeric polypeptide (called

the Lantibody Display Peptide) is not dispersed into the surrounding medium. Rather, it is anchored to the surface of the host cell, with the lantibiotic portion of the Lantibody Display Peptide outside the cell.

In contrast, Hansen (U.S. Pat. No. 5,516,682) describes a mutant subtilin with enhanced stability and activity. The examiner is *incorrect* when he states that the peptides described in Hansen (U.S. Pat. No. 5,516,682) have a lantibiotic peptide, an amino acid spacer attached to the C-terminus of the lantibiotic peptide, and a subtilin leader peptide attached to the spacer. Indeed in Hansen (U.S. Pat. No. 5,516,682), the subtilin leader peptide is attached to the N-terminus of the lantibiotic peptide (*i.e.*, subtilin), which is the normal orientation of the leader peptide to the lantibiotic peptide. Therefore, Hansen (U.S. Pat. No. 5,516,682) cannot anticipate claims 1 to 4 and 6 and the applicant respectfully requests withdrawal of this rejection.

Claims 1 to 4 and 6 were rejected under 35 U.S.C. §102(a), (b), or (e) as being anticipated by Hansen (WO 97/11713). The applicant respectfully traverses in view of the preceding claim amendments and succeeding remarks.

Once again, the examiner is *incorrect* when he states that the peptides of Hansen (WO 97/11713) have the leader peptide attached to the C-terminus of the lantibiotic peptide. In Hansen (WO 97/11713), the leader peptide is attached to the N-terminus of the lantibiotic peptide - see the formula on page 5. Therefore, Hansen (WO 97/11713) cannot anticipate claims 1 to 4 and 6 and the applicant respectfully requests withdrawal of this rejection.

Rejection under 35 U.S.C. 103 –

Claims 1 to 4 and 6 to 8 were rejected under 35 U.S.C. §103(a) as being unpatentable over Hansen (U.S. Pat. No. 5,516,682) or Hansen (WO 97/11713) and Gyuris *et al.* (U.S. Pat. No. 6,420,110). The applicant respectfully traverses in view of the preceding claim amendments and succeeding remarks.

As noted above, neither of the Hansen references describe a lantibiotic peptide, an amino acid spacer attached to the C-terminus of the lantibiotic peptide, and a subtilin leader peptide attached to the spacer. Gyuris *et al.* do not overcome the deficiencies of

Application Serial No.: 09/893,499
Inventor(s): Hansen
Attorney Docket No.: 108172-00056

the two Hansen references. Indeed, Gyuris *et al.* do not even mention lantibodies, irrespective of the position of the leader peptide.

The applicant respectfully submits that claims 1 to 4 and 6 to 8 are not unpatentable over either Hansen (U.S. Pat. No. 5,516,682) or Hansen (WO 97/11713) in view of Gyuris *et al.* and respectfully requests withdrawal of this rejection.

Application Serial No.: 09/893,499
Inventor(s): Hansen
Attorney Docket No.: 108172-00056

IV. CONCLUSION

In view of the amendments and remarks above, the applicant respectfully submits that this application is in condition for allowance and requests favorable action thereon.

In the event this response is not timely filed, the applicant hereby petitions for an appropriate extension of time. The fee for this extension, along with any additional fees required, may be charged to Deposit Account No. 01-2300, referencing Attorney Docket No. 108910-00056.

Respectfully submitted,

AREN'T Fox PLLC



Gautam Prakash, Ph.D.
Registration No.: 53,481
Direct Telephone No.: 202-857-6057

Customer No.: **004372**

1050 Connecticut Avenue, N.W.
Washington, D.C. 20036-5339

Telephone No.: 202-857-6000
Facsimile No.: 202-857-6395

/GP